

LETTER TO THE EDITOR

Pfizer/BioNTech-associated perniosis in two young adults with re-challenge evidence

Dear Editor,

The employment of novel mRNA delivery with Pfizer/BioNTech (BNT162b2) and Moderna (mRNA-1273) SARS-CoV-2 vaccines has cultivated close scrutiny for adverse events. The novel immunogenic nature of the SARS-CoV-2 virus and its peculiar cutaneous clinical sequelae has further compounded this behaviour. Authors of the American Academy of Dermatology (AAD) and the International League of Dermatological Societies (ILDS) recently published a registry demonstrating a breadth of cutaneous reactions related to the mRNA vaccines.¹ Unsurprisingly, the most frequent is local injection site reactions, seen also in Bogdanov *et al.*,² but the degree of atypical adverse events, such as erythromelalgia in 6%,¹ is striking. Chilblains, or perniosis, are an infrequent reaction in this registry of 414 patients; it was seen eight times as frequently in Pfizer/BioNTech vaccination (8.8%) than amongst patients who received Moderna (1.1%). In contrast, in the setting of natural infection from a registry of 716 patients from 31 countries, up to 18% and 33% of patients with either a confirmed or suspected natural infection, respectively, developed a pernio-like reaction; in the setting of natural infection in this registry, and it was the second most common COVID-19-associated dermatologic manifestation.³

We report two cases of Pfizer/BioNTech vaccine-associated chilblains in previously healthy patients, both with re-challenge

evidence and negative viral nasopharyngeal detection. The 31- and 33-year-old men developed lower extremity dorsal acral and periungual pruritus as well as slight tenderness with erythema and oedema at days 5 and 7 following their first vaccine dose. In both cases, the erythema, pruritus and slight tenderness subsided almost entirely by the second dose (28 days later). However, 24-h following their second dose, both had a recurrence of symptoms; in one case, this proceeded to the point of ulceration (Fig. 1). Natural resolution was achieved within 6 weeks in both patients with no residual skin or neurovascular changes. The Naranjo Algorithm was used to score the probability of an adverse drug reaction, which yielded a score of 6 (probable) in both cases.⁴

The morphological findings in vaccine-induced chilblains appear indistinguishable from idiopathic perniosis and that associated with autoimmune connective tissue disease (AiCTD) with accompanying histologic lymphocytic vasculitis.⁵

Both the Pfizer/BioNTech and Moderna (mRNA-1273) vaccines encode spike protein antigens with a very high degree of similarity between the generated antibody responses targeted at epitopes from the receptor-binding domain.⁶ While both cases reported here were secondary to the Pfizer/BioNTech vaccine, as well as those reported by McMahon *et al.*¹ ($n = 2$) and Lesort *et al.*⁷ ($n = 1$), we suspect that this cutaneous adverse event is not limited to Pfizer/BioNTech, but instead represents a phenomenon of immunogenic response; further work is needed to better understand the pathogenesis and relevance to systemic immunity.

In conclusion, we report two cases of SARS-CoV-2 perniosis associated with mRNA Pfizer/BioNTech vaccine, which recurred



Figure 1 Pernio-like lesions on the toes of two male patients, 24 h post-Pfizer/BioNTech vaccine. Both cases demonstrate digital oedema and deeply erythematous-violaceous plaques on the dorsal, periungual and distal toes (Patient a; initial presentation), as well as ulceration of the second and later multiple digit (Patient b; 96 h postrechallenge).

with re-challenge and were self-limited. Vaccine-related pernio-sis appears to be an indolent cutaneous reaction, which abates in short term, but further documentation and awareness are needed to understand the natural history in larger case numbers.

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The patients in this manuscript have given written informed consent to the publication of their case details.

Conflict of interest



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Data Availability Statement

Not applicable, and no new data were generated.

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